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### (54) Overlay alignment measurement of semiconductor wafers

(57) The present invention is a new target, and associated apparatus and methods, for determining offset between adjacent layers of a semiconductor device. The target disclosed here includes a first periodic structure to be placed on a first layer of the device and a second periodic structure, that complements the first periodic structure, placed on a second layer of the

device at a location that is adjacent the first periodic structure when the second layer is placed on the first layer. Any offset that may occur is detected by the present invention either optically, micro-mechanically or with electron beams using any of various methods and system embodiments.

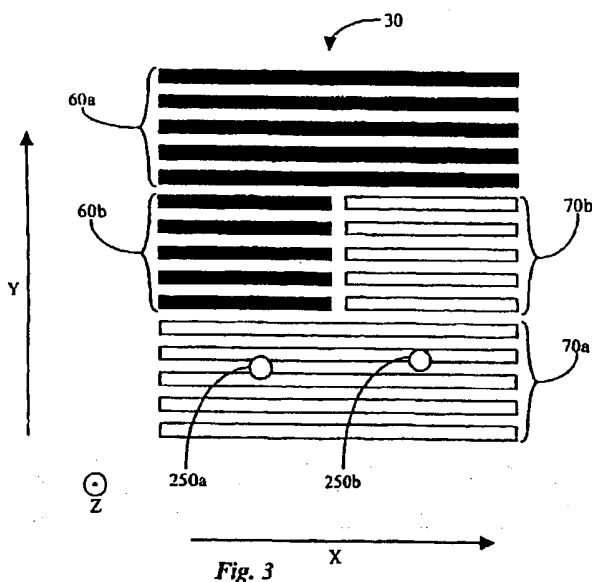


Fig. 3

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# EUROPEAN SEARCH REPORT

Application Number  
EP 97 30 5036

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CI.6)
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 7 January 1999	Examiner Heryet, C
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03 92 (P04C01)

# ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 97 30 5036

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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